

Defensive Driving

Introduction

Defensive driving is an approach to driving that emphasizes safety and proactive decision-making. It entails maintaining constant awareness of the surroundings, anticipating potential hazards, and taking necessary precautions to prevent accidents. When implementing defensive driving techniques, drivers remain focused and attentive, carefully surveying the road for any risks and adjusting their driving behaviour accordingly. They prioritize maintaining a safe distance from other vehicles, complying with traffic laws and speed limits, and avoiding distractions that could divert their attention. Defensive driving also involves recognizing one's own driving limitations and actively seeking opportunities for skill improvement through education and training.

Scope

This publication provides guidance for applying defensive driving principles to everyday driving habits, empowering individuals to make responsible decisions that prioritize safety.

This publication does not give details on developing and coaching drivers.

Learning more about defensive driving

1. Does your company require from transport operations a defensive driving program?
2. Does your company have a method of measuring and assessing defensive driving performance?
3. Does your company actively promote defensive driving to its drivers and/or transport function personnel?
4. Does your company promote practical training on defensive driving?

If the answer to any of the above questions is 'no', then you should consider taking action!

THIS TRANSPORT SAFETY INFORMATION GIVES GUIDANCE ON DEFENSIVE DRIVING AND ACTIONS THAT WILL HELP TO IMPROVE SAFETY IN ROAD TRANSPORT.

1. Key principles of defensive driving include:

- Awareness: Maintaining constant awareness of the road, other vehicles, pedestrians, and potential hazards.
- Anticipation: Anticipating and predicting the actions of other drivers, pedestrians, and potential road hazards.
- Preparedness: Being prepared to react quickly and appropriately to unexpected situations or emergencies.
- Following Distance: Maintaining a safe distance from the vehicle in front to allow for sufficient stopping distance and reaction time.
- Speed Management: Adhering to speed limits and adjusting speed to match road conditions, traffic flow, and weather.
- Lane Discipline: Using proper lane positioning, signaling, and adhering to lane change rules.
- Hazard Response: Responding calmly and effectively to hazards, such as sudden braking, swerving, or unexpected road conditions.
- Avoiding Distractions: Minimizing distractions while driving, such as using mobile devices, eating, or engaging in other activities that divert attention from the road.
- Adhering to Traffic Laws: Obeying traffic laws, signals, signs, and right-of-way rules.
- Continual Improvement: Seeking opportunities for ongoing education and training to enhance driving skills and knowledge.

The transport safety performance can be improved if these principles are followed and the main causes for accidents can be avoided.

2. Main causes of vehicle accidents

Vehicle accidents can occur due to various reasons. However, often factors related to defensive driving are a key contributor, the main ones being but not limited to:

- distraction;
- speeding;
- fatigue;
- driving under the influence of substances that may compromise safety;
- reckless or aggressive driving;
- driving environment;
- failure to obey traffic laws.

It is important to note that these causes can often overlap or interact with one another. By understanding the causes, drivers can take proactive measures to prevent accidents and ensure the safety of themselves and others.

The main causes of accidents are described below in further detail.

2.1 Distraction

The main causes of distraction at the wheel can be categorized into three types:

1. visual
2. manual
3. cognitive

These distractions divert the driver's attention from the task of driving and increase the risk of accidents.

For more information on distracted driving, see EIGA Safety Info TS 12 [1].

2.2 Speeding

Speed plays a significant role in determining the incident rate on the roads. Here is how speed can affect the incident rate:

- increased stopping distance;
- reduced reaction time;
- increased impact severity;
- reduced control;
- decreased visibility;
- reduced margin for error.

To minimize the incident rate and enhance road safety, it is crucial for drivers to adhere to speed limits and adjust their speed based on the road conditions, traffic flow, and visibility. Slowing down allows for better control, improved reaction time, and increased safety for everyone on the road.

2.3 Fatigue

Fatigue is a significant contributor to accidents on the road, as it impairs a driver's ability to focus, react quickly, and make sound decisions.

Getting behind the wheel while fatigued puts driver's life and the lives of others at risk. It is crucial to recognize the signs of fatigue and take proactive steps to ensure you are well-rested and alert before operating a vehicle.

For more information on fatigue, see EIGA Safety Info TS 13 [2].

2.4 Driving under the influence

Driving under the influence (e.g drugs or alcohol) has a significant impact on the incident rate on roads, posing serious risks to the drivers and other road users, by:

- impairing judgment and decision-making;
- reducing coordination and motor skills;
- decreasing alertness and concentration;
- impairing vision and perception;
- increasing risk-taking behavior;
- increasing fatigue and drowsiness;
- increasing severity/consequence of accident.

Strict alcohol and drug policies in transportation of dangerous goods are mandatory by law. However, further mitigating the risks of accidents related to drunk driving may involve taking additional proactive measures, such as:

- raising awareness with the drivers;
- considering alcohol (and drug) tests;
- considering the use of devices acting on the ignition of vehicles requiring a negative alcohol test ("alco-locks").

2.5 Reckless or aggressive driving

Reckless or aggressive driving significantly increases the risks of accidents on the road, endangering the lives of drivers, passengers, and other road users. The effects of aggressive driving can be a reduction of reaction time and an increase of the risk of collisions.

The following are indicators of a reckless driver:

- speeding;
- harsh acceleration and braking;
- poor lane discipline;

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- driving too close to the vehicle in front;
- running red lights and stop signs;
- road rage incidents.

It is crucial to maintain patience and composure, and respect traffic laws and regulations. Staying calm, allowing for ample following distance, signaling intentions clearly, and yielding right of way when required promotes safer driving practices and helps create a more harmonious and secure road environment for everyone. It is critical that these values are shared and promoted with drivers.

2.6 Driving environment

Certain aspects of the broader environment of driving also have to be taken into consideration by a defensive driver.

For instance, weather conditions play a significant role in road safety, and certain weather conditions, such as rain, snow, fog or heavy winds can increase the risk of accidents.

Poor road conditions can also significantly increase the likelihood of accidents on the road and have to be taken into consideration.

Wildlife encounters can also create hazards and disrupt the flow of traffic.

By properly adjusting speeds, staying vigilant and maintaining a safe following distance, risks due to the driving environment can be minimized.

For more information on weather and road conditions, see EIGA TP N° 28 [3].

2.7 Failure to obey traffic laws

Failure to obey traffic laws is a significant contributing factor to road accidents. When drivers disregard traffic laws, they put themselves and others at risk. Here are several factors regarding failure to obey traffic laws that can lead to accidents:

- speeding;
- running red lights and stop signs;
- illegal turns and lane changes;
- distracted driving;
- driving under the influence of substances that may compromise safety;
- reckless driving;
- failure to yield right of way.

To prevent accidents caused by failure to obey traffic laws, it is crucial to:

- stay informed about local traffic laws and regulations.
- always adhere to posted speed limits and adjust speed according to road and weather conditions.
- stop at red lights, stop signs, and yield when necessary.
- use turn signals to indicate lane changes and turns.
- avoid distractions and keep full attention on the road.
- never drive under the influence of alcohol, drugs, or other impairing substances.
- drive defensively, maintaining awareness of your surroundings and anticipating the actions of other drivers.
- respect the right of way and yield to other drivers, pedestrians, and emergency vehicles as required.

By obeying traffic laws, drivers will significantly reduce the risk of accidents, promote road safety, and contribute to a more harmonious and orderly traffic environment.

2.8 Inexperienced drivers

Inexperienced drivers are more prone to accidents due to their limited knowledge, skills, and lack of familiarity with various driving situations. Here are some ways in which inexperienced drivers can contribute to accidents on the road:

- lack of hazard perception;
- poor decision-making;
- difficulty in handling emergencies;
- lack of familiarity with traffic laws;
- poor vehicle control;
- limited driving skills;
- risky behavior.

To mitigate the risks associated with inexperienced drivers, it is important to:

- Enroll in driver education programs: Drivers should participate in comprehensive driver education programs that provide theoretical knowledge and practical training to develop essential driving skills.
- Gain experience in various conditions: Drivers should gradually expose themselves to different driving conditions, such as heavy traffic, adverse weather, and unfamiliar roadways, under the guidance of an experienced driver. This helps them develop the necessary skills and confidence to handle diverse situations.
- Seek continuous learning: Drivers should recognize that learning to drive is an ongoing process. They should actively seek opportunities for further education and skill enhancement, such as defensive driving courses or advanced driver training programs.

By acknowledging the challenges associated with inexperience and taking proactive measures to improve their skills and knowledge, inexperienced drivers can significantly reduce their risk of accidents.

For more information on driver recruitment, see EIGA Safety Info TS 05 [4].

2.9 Inadequate vehicle maintenance

Inadequate vehicle maintenance is a significant contributing factor to road accidents. When vehicles are not properly maintained, they can develop mechanical issues that compromise their safety and performance. This may not seem directly linked to defensive driving, but keeping a vehicle in a good and roadworthy condition is a prerequisite for safe driving and best practice for a defensive driver.

For more information on vehicle specification and maintenance, see EIGA Safety Info TS 09 [5].

3. Practical defensive driving training compared to classroom training.

Practical defensive driving training holds immense importance when compared to classroom training due to its direct application and real-world effectiveness. While classroom training provides valuable knowledge and theoretical understanding of defensive driving principles, practical experience enhances these teachings by allowing drivers to actively engage and adapt to real-time situations on the road.

The practical training complements classroom training by bridging the gap between theory and real-world application. The hands-on experience, exposure to challenges, development of decision-making skills, increased adaptability, and boosted confidence make practical defensive driving an essential component in building safe and responsible drivers. It equips individuals with the skills necessary to navigate the roads effectively, anticipate and prevent accidents, and promote overall road safety.

Practical training can be conducted at Gas Company sites. However, some elements of practical training that may have additional benefit can only be conducted at dedicated training centers. An example of the components of a defensive driving training course at dedicated centers can be found in Annex 1.

Conclusions

By adhering to these guidelines and consistently practicing defensive driving techniques, drivers can significantly enhance their safety on the road and minimize accidents. Prioritizing safety should always be at the forefront of every driver's mindset, as it directly impacts their own well-being and that of others on the road.

References

Unless otherwise specified, the latest edition shall apply.

- [1] EIGA Info TS12, *In Vehicle Distraction Management*, www.eiga.eu
- [2] EIGA Info TS13, *Managing Driver Fatigue*, www.eiga.eu
- [3] EIGA Training Package N° 28, *Safe Driving in Bad Weather Conditions*, www.eiga.eu
- [4] EIGA Info TS05, *Driver Recruitment Process for Bulk and Cylinder Vehicles*, www.eiga.eu
- [5] EIGA Info TS09, *Vehicle Specification and Maintenance*, www.eiga.eu

Further information

EIGA Info TS01, *Transport Safety Information, an Overview*, www.eiga.eu

ANNEX 1: Example defensive driving training course

Defensive Driving Courses

Driving heavy vehicles is a demanding and highly responsible task that necessitates specialized skills and extensive knowledge. Beyond the mastery of the mechanical aspects of operating these substantial vehicles, ensuring safety for oneself and others on the road is of paramount importance. Tailored defensive driving courses for heavy vehicle drivers offer essential training to enhance their skills and significantly reduce the risk of accidents.

Course Overview:

The Defensive Driving Course is a comprehensive training program that typically covers a range of vital topics, including but not limited to:

- **Developing risk perception and prevention:** This module focuses on enhancing the ability to recognize potential hazards and proactively prevent them.
- **Emphasizing the importance of the human factor:** Acknowledging the role of human behavior in road safety and teaching strategies to mitigate human-related risks.
- **Strengthening control over instinctive reactions:** Training to effectively manage instinctive responses during critical situations, promoting safer decision-making.
- **Teaching emergency-situation management:** Equipping drivers with the knowledge and skills needed to handle emergency scenarios effectively and calmly.
- **Deepening knowledge on ADAS:** Understanding and utilizing Advanced Driver Assistance Systems to improve safety and enhance vehicle operation.

While these topics are fundamental, the course may also include additional subjects that are highly relevant to heavy vehicle drivers in specific sectors.

Classroom Activities:

The classroom activities within the Defensive Driving Course encompass a wide range of subjects, including:

- **Safety and risk reduction concepts:** Exploring fundamental safety principles and strategies to mitigate risks, emphasizing their application in real-world scenarios.
- **Causes and dynamics of heavy vehicle accidents:** Analyzing the multifaceted factors contributing to accidents involving heavy vehicles, with a focus on prevention.
- **Driver's mental and physical state:** Understanding how a driver's mental and physical condition impacts safe operation and strategies for maintaining alertness.
- **Observation techniques:** Enhancing the ability to observe and react to changing road conditions effectively, embracing proactive hazard detection.
- **Perception and reaction:** Developing quick and appropriate responses to unexpected situations, crucial for safe driving.
- **Preventive measures:** Strategies for preventing accidents and minimizing their impact, emphasizing proactive driving habits.
- **Driving position and seat belt usage:** Ensuring proper driving posture and seat belt use for safety, with practical guidance on ergonomics.
- **Driver assistance systems:** Understanding the functionality and purpose of assistance systems, enhancing vehicle handling capabilities.

Practical Activities and Tests:

Some practical testing can only be conducted at specialized Safe Driving Centers, featuring dedicated practice areas. Each crew consists of a participant and an instructor serving as a tutor. Practical exercises may include:

- **Driving position:** Practicing correct driving posture and positioning within the vehicle, focusing on comfort and safety.
- **Slow and dynamic slalom:** Navigating through challenging courses to develop precision, control, and agility in heavy vehicles.
- **Emergency braking and obstacle avoidance:** Preparing for emergency stops and evasive maneuvers, crucial for averting accidents.
- **Understeer and oversteer control:** Developing expertise in managing vehicle stability during different handling scenarios, promoting safe handling in adverse conditions.
- **Curve setting and driving:** Mastering the technique of safe navigation through curves, emphasizing speed management.
- **Skid control:** Learning to control and recover from skidding situations, vital for maintaining control in slippery conditions.

Safe Driving Centers:

These centers are equipped with advanced technologies designed to safely simulate various risk and emergency situations. The benefits of these centers include:

- **Enhanced safety:** Reduced execution speed ensures the safety of participants during tests and exercises, allowing for focused learning.
- **Improved feedback:** Participants can easily perceive corrections made to the vehicle's behavior, facilitating skill development.
- **Awareness development:** Participants gain insights into correcting instinctive but often incorrect maneuvers, enhancing safer driving habits.

Course program example:

- **Theory (classroom activities):** The course includes interactive multimedia elements and video analysis, utilizing an Experience Archive. "Eye Tracking" technology can be employed to assess road and safety center scenarios. Participants engage in a "Driving Diagnosis" on state roads, urban areas, and motorways. This session evaluates provisions for preventive and defensive driving, visual skills, and the ability to identify potential road risks.
- **Practice (practical activities and test):**
 - **Preventive braking:** Participants practice safe stopping in front of obstacles, emphasizing maintaining a safe following distance and assessing necessary space at varying speeds. This exercise is conducted on wet surfaces with low grip coefficients, and can be triggered by radio-controlled traffic light representing the hazard.
 - **Braking and safety distance:** Participants practice braking at different speeds and visually measure stopping distances using paddles with meter indications, promoting a better perception of space and risk.
 - **Evaluation of grip:** Loss of grip is explored concerning speed and road surface conditions, conducted on an irrigated steering pad with varying grip coefficients, illustrating the impact of road surface on grip loss.
 - **Avoiding an Obstacle:** Participants practice avoiding sudden obstacles. This exercise enhances decisive steering maneuvers while maintaining vehicle stability during realignment.

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Further practical exercises designed to assess drivers' proficiency in specific scenarios and tasks may be considered.

Defensive driving courses for heavy vehicle drivers play an essential role in enhancing road safety. These courses empower drivers with the knowledge and skills required to avoid accidents, save lives, and operate heavy vehicles responsibly and efficiently. Investing in such training benefits not only the drivers themselves but also contributes to safer roads and communities. Heavy vehicle operators should consider these courses as a vital part of their professional development and commitment to road safety.

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